Quadratic Equation Word Problems

Level 1 - Create and solve simple quadratic equations
Level 2 - Create and solve quadratic equations where factoring is required

Answers:

Level 1

a) $x(x+1)=6 \rightarrow$ Integers: 2 and 3
b) $x^2+x=56 \rightarrow$ Number: -8
c) $x^2=x+12 \rightarrow$ Number: 4
d) $x(x-8)=240 \rightarrow$ Length: 20 m
e) $\frac{1}{2}(2h+4)(h)=8 \rightarrow$ Base Length: 8 cm
f) $(x+2)^2-x^2=68 \rightarrow$ Numbers: 16 and 18
g) $y^2=8(y+2)+4 \rightarrow$ Ages: 10, 11, 12

Level 2

a) Set $h=0$: $-2t^2+8t+10=0 \Rightarrow (t-5)(t+1)=0 \Rightarrow t=5$ s
b) Let legs x and $x+7$: $x^2+(x+7)^2=13^2 \Rightarrow x=5,\ x+7=12 \Rightarrow$ sides 5 cm and 12 cm
c) Let width w, length $w+3$: $10\,w(w+3)=100 \Rightarrow w^2+3w-10=0 \Rightarrow w=2 \Rightarrow$ base 2 cm by 5 cm
d) Let integers n and $n+1$: $n^2+(n+1)^2=221 \Rightarrow n^2+n-110=0 \Rightarrow n=10 \Rightarrow$ integers 10 and 11
e) Let height h, width $12h+2$: $h(12h+2)=48 \Rightarrow h^2+4h-96=0 \Rightarrow h=8 \Rightarrow$ width 6 ft, height 8 ft
f) Let border x: $(8+2x)(6+2x)=120 \Rightarrow x^2+7x-18=0 \Rightarrow x=2 \Rightarrow$ border width 2 cm